GREATER PRAIRIE CHICKEN RESTORATION

HISTORICAL REVIEW

Greater prairie chickens (*Tympanuchus cupido pinnatus*) commonly nested throughout Iowa from the time of European settlement in the mid-nineteenth century until about 1900. Numbers peaked about 1880 when most of Iowa was a mosaic of small grainfields, hayfields, pasture, and native prairie, which provided ideal habitat conditions (Ehresman 1996). During the late nineteenth century, prairie chickens were the most abundant gamebird on Iowa prairies. Hunting and trapping them for food and market were very important to settlers. Bags of 25 to 50 a day were common, and some hunters took up to 200 per day.

By 1878, Iowa lawmakers were concerned that prairie chickens were being over-harvested. The Iowa Legislature passed a law that year limiting the daily bag of prairie chickens to 25 birds per person. This is believed to be the first time that bag limits were used as a tool to regulate the harvest of game in the United States. Additional restrictions followed, and the last open season for prairie chickens in Iowa was held in 1915 (Stempel and Rodgers 1960).

As agricultural land use intensified, populations of prairie chickens started to decline. By the 1930's, most prairie chickens found in the northwestern part of the state were migrant winter flocks. Small numbers continued to nest along the northern, northeastern, and southern borders of the state. By the 1950's, the only known nesting prairie chickens were in Appanoose, Wayne, and Ringgold Counties in southern Iowa. The last verified nesting prior to reintroduction attempts was in Appanoose County in 1952 (Stempel and Rodgers 1960).

RESTORATION

First Reintroduction Attempt

In the early 1980's, the Iowa Conservation Commission, now the Iowa Department of Natural Resources (IDNR), attempted to restore prairie chickens to west central Iowa. The IDNR negotiated with the Kansas Fish and Game Commission (KFGC), now Kansas Department of Wildlife and Parks (KDWP), to trade wild turkeys for 100 prairie chickens (Table 8.1). The release site was located in the Loess Hills east of Onawa, Monona County (Fig. 8.1). This is an area of steep to moderately rolling bluffs and hills bordering the Missouri River valley. These hills have large expanses of grassland interspersed with brush and small crop fields.

Fifty-three prairie chickens were released in 1980. Results from the first release were mixed. A large number of chickens were observed in the release area

the following day; however, sightings thereafter were sporadic and often at a distance from the release area. During 1980, reliable sightings were reported both near the release area and up to 19 miles away. The KFGC was unable to secure additional birds for stocking in 1981; however, observations continued. In 1981, single birds occurred near the release area and groups of birds were reported 20 and 60 miles from the release site. No spring leks were located in the 2 years following the release, and no reproduction was reported.

Following mild winters in 1981 and 1982, KFGC personnel decided to attempt a different trapping approach. Chickens were rocket-netted on leks in April as they displayed. This trapping method proved successful, and 48 chickens were transported to Iowa for release at the same area in the Loess Hills in 1982. Rather than simply turning the birds loose from transport crates, as was done during the first release, the birds were banded and put in a large holding pen with separate cells for each sex. The objective was to give the chickens a chance to settle down after transport and to acclimate to the new area. Males were held overnight and released the next morning. Females were released 24 hours later. It was hoped that males would be stimulated to remain near the release site by holding the females a day longer.

Taped lek calls were played through speakers located near the pen about 45 minutes prior to releasing males. This was an attempt to induce chickens to establish a lek in the area. The release was made by slowly raising the pen door from a distant location. Most males simply walked out of the pen, moved randomly about for a few minutes, and then wandered near the females' side of the pen. They remained there for 15 to 45 minutes before walking or flying off. Females were released under similar conditions the following morning. Most walked from the pen and flew short distances to taller grass cover.

Two prairie chicken broods were reported near the release site in 1982, and up to six adults were observed near the Missouri River bottom the same year. Two leks consisting of only a few displaying males were located in 1983 and 1984. Most sightings were in the heavily agricultural Missouri River valley instead of the hills where they were released. The birds appeared to prefer the level valley to the hilly region where they were released. Suitable grassland habitat was lacking in the valley. Only an occasional sighting has been reported in this region since 1984, leading to the conclusion that this reintroduction effort failed (Ron Munkel, IDNR, *pers. comm.*).

Second Reintroduction Attempt

1987-1989 Stockings: In 1987, the IDNR made a second restoration attempt. The release site was on the Ringgold Wildlife Area located two miles north of the Missouri border in Ringgold County in south central Iowa (Fig 8.1). Wildlife personnel considered this region to be the best potential prairie chicken habitat in Iowa. The immediate vicinity was one of the last strongholds of prairie chickens in southern Iowa and northern Missouri (Christisen 1985, Stempel and Rodgers 1960). The surrounding portions of Ringgold County and adjacent Harrison County, Missouri, are cattle country, with 60% or more of the land in permanent grass. Donald Christisen (1985) concluded that the demise of prairie chickens in this area was due to heavy utilization of grasslands by livestock, resulting in poor quality habitat. Recent years had brought some positive changes

in the grasslands of the area. It was hoped that these changes would again provide suitable habitat for prairie chickens. A major change was restoration of around 200 ha of prairie on the Ringgold Wildlife Area. Other changes were better pasture management by some area farmers and the Conservation Reserve Program (CRP). CRP converted thousands of hectares of cropland into a diversity of mostly undisturbed grasslands for at least 10 years.

The birds for this reintroduction were again obtained from Kansas through a three-way trade in which IDNR supplied wild turkeys to the Michigan Department of Natural Resources (MDNR) while a MDNR crew trapped prairie chickens in Kansas for translocation to Iowa. Prairie chickens were captured in the spring with funnel traps set on booming grounds in the Flint Hills region of Kansas. Every few days the captured birds were transported to Iowa and released the next morning utilizing a soft release box and artificial lek technique, which had been successfully used in Kansas to reintroduce sharptail grouse (Rodgers 1987). A total of 254 prairie chickens were translocated to the Ringgold Wildlife Area from Kansas during 1987, 1988, and 1989 (Table 8.1).

By the spring of 1988, leks had been established at the release site and a site 15 km south in Missouri. The Missouri site was on the Dunn Ranch, a cattle ranch operated by Forrest and Maury Meadows of Bethany, Missouri. The ranch included about 500 ha of well-managed native prairie pasture in addition to several hundred hectares of cool season pasture. This ranch contained a major lek before the disappearance of prairie chickens in the 1960's. The lek established in 1988 was on the same site as the historic lek, and the birds using it were verified as Iowa release birds by the bands on their legs (Maury Meadows, *pers. comm.*).

No prairie chickens were released in 1990 or 1991. Reproductive conditions for gallinaceous birds were poor in this area throughout that time; however, brood sightings were made each year. By 1991, prairie chickens appeared to be firmly established on the Dunn Ranch, but only one lek of six males could be located in Iowa that year. The success of the reintroduction of prairie chickens to the Dunn Ranch was the bright spot of the project thus far. It was evident that reintroductions in this region could succeed.

1992-94 Stockings: Based on the success of the Dunn Ranch, the IDNR continued the restoration program with more translocations from Kansas. An agreement with KDWP allowed IDNR crews to trap and translocate 100 prairie chickens a year. Instead of releasing all of the birds at one site, it was decided to release significant numbers on large grassland tracts in the region, while releasing a smaller number at the original Ringgold Wildlife Area. Birds were translocated to two new sites in 1992, Mount Ayr and Kellerton (Fig. 8.1). The Mount Ayr site is 28 km northwest and the Kellerton site is 24 km northeast of the Ringgold Wildlife Area. The Mount Ayr site was dropped in 1993, and the Orient site was added. Orient is 90 km northwest of the Ringgold Wildlife Area. All of the sites contained high quality grasslands and open landscapes. Most land use at all three sites was a mixture of pasture, hay, and CRP.

A total of 304 prairie chickens were released in this three-year period (Table 8.1). Gentle releases were made onto either artificial leks or actual leks.

Subsequent Stocking:

No additional stockings were anticipated following releases in 1994. However, while live trapping Sharp-tailed Grouse for IDNR's restoration project in the Loess Hills, South Dakota Game Fish and Parks (SDGFP) employees incidentally trapped three prairie chickens in 2001. Rather than release these birds at the trap site, SDGFP offered them to IDNR. The offer was accepted, and one male and two female chickens were released at the Kellerton lek in April 2001. This additional release results in a total of 561 prairie chickens translocated to Iowa since 1987.

Missouri Reintroduction: The Missouri Department of Conservation (MDC) has been reintroducing prairie chickens in north central Missouri since 1993. Approximately 100 birds have been released each year through 1997 and again in 2000. They have released birds at eight sites located 60 to 100 km southeast of the Ringgold Wildlife Area and 10 to 40 km south of the Iowa border (Larry Mechlin, MDC, *pers. comm.*).

There were sightings of prairie chickens immediately south of the Iowa border in the spring of 1998, and it is probable that adjacent areas in Iowa have prairie chickens as a direct result of Missouri's stocking efforts. Jeff Telleen and Bruce Fistler picked up a road-killed prairie chicken in Monroe County just south of Melrose on June 7, 1998. The bird was not banded and was mostly likely a pioneering bird from one of Missouri's latest releases. Thunderbird Lake, Missouri, is the release site closest to Melrose. Missouri's releases at Thunderbird Lake are very close to the Iowa border and may act as repayment for Iowa's 1987 releases that reestablished birds on the Dunn Ranch (Larry Mechlin, MDC, *pers. comm.*).

BOOMING GROUND SURVEY

Methods

Attempts are made each spring by IDNR personnel and volunteers to locate leks and count booming males. Counts of known leks are made on sunny mornings with winds <10 mph throughout the month of April. Leks sites are glassed or flushed to determine the number of booming males. New leks are located by driving gravel roads and stopping periodically to listen for booming. Because of the large area of potential habitat and limited manpower, the number of booming males observed is considered minimal. It is highly probable that a number of booming grounds have not been located. MDC personnel make similar counts on and around the Dunn Ranch, where the birds are part of the same regional population.

Results

1995: The number of booming grounds increased from three in 1994 to seven in 1995 with 40 males present (Table 8.2). These seven lek sites are found in five different counties. Two of these counties are release site counties (Ringgold, Adair). The lek sites in Adams, Decatur, and Union Counties are birds pioneering new areas. Adult males have a strong affinity for established leks, whereas young males may actively look for new areas to establish a lek. Young females may also wander in the spring in search of a lek. A mosaic of leks across a large area may prove to be an important component of prairie chicken biology.

1996: In the spring of 1996, six leks from 1995 still showed some activity.

Note in table 8.2 that 18 males were observed on four leks, but no legal description was taken. The number of booming males declined 38% from 40 to 25 birds (Table 8.2). Similar to prairie chickens, pheasant numbers in the southern pasture region declined 31% during this same time. Nesting conditions during the spring and summer of 1995 were abnormally wet. Southern Iowa experienced rainfall totals for April and May 6 inches above normal. This likely reduced nest success in 1995, leading to the reduced number of booming males in 1996.

1997: Only Ringgold and Decatur Counties had active leks during the spring of 1997, which is a significant decrease from the five counties with active leks in 1996. The decline in lek sites may have been a result of land coming out of CRP. One lek site in Adair County was plowed in 1996. There was still activity at this site in 1996: however, no birds were observed booming at this location in 1997. In addition to Adair, there were observations of non-booming chickens in Adams, Warren, and Union Counties during spring 1997. Warren was a new county for prairie chicken reports and is somewhat isolated from source populations. This may be indicative that more birds are out there than are being reported.

Final counts showed the number of booming males had declined even further in 1997 (-28%), with 18 males counted on four active leks (Table 8.2). Another abnormally wet spring in 1996, combined with the loss of CRP, contributed to decreasing prairie chicken numbers. Rainfall across the prairie chicken restoration area averaged 5 inches above the long-term average. Pheasant counts across southern Iowa also declined >30% during this time. The decline in booming males could again be attributed to poor reproductive success during 1996, with the loss of several leks sites in Adair County aggravating the problem of poor recruitment.

1998: Department personnel observed booming activity in Adair, Decatur, and Ringgold Counties in 1998. Forty-three males were observed on nine leks (Table 8.2). This represents a 139% increase in the number of booming males and a 125% increase in active leks over 1997. Upland bird nesting conditions greatly improved across southern Iowa in 1997, as evidenced by a 60% increase in pheasant numbers during 1997. Mel Moe reported the first prairie chicken brood on June 6, 1998: a brood of 12 in Section 33, Monroe Township, Ringgold County

1999: Department personnel observed booming activity in Adams, Decatur, and Ringgold Counties in 1999. Thirty-nine males were observed on eight leks (Table 8.2). This represents a 9% decrease in the number of booming males and 11% decrease in active leks over 1998. Due to the abnormally wet nesting season in south central Iowa last year, pheasant counts were at an all time low for the region. The fact that prairie chicken numbers remained essentially unchanged from 1998 is a very positive sign for Iowa's population. The location of known active leks is shown in Figure 8.2.

2000: Booming prairie chicken males were observed in Decatur, Ringgold, and Wayne Counties in 2000 (Table 8.2). This was the first time a lek was recorded in Wayne County. Forty-four males were active on six booming grounds. This was the highest number of

booming males recorded in Iowa and the highest total number of males per lek. The number of booming males increased 13% over 1999, but the number of active leks decreased from eight to six (-25%). The six-year mean total number of booming males is 34.8; therefore, the number observed in 2000 is 26% above the mean. The same trend was observed for total number of males per lek; 7.3 is 28% above the six-year mean of 5.7. Known active lek locations are shown in Figure 8.2.

2001: Booming activity was observed by department personnel again in Decatur, Ringgold and Wayne Counties in 2001 (Table 8.2). Birds were active on seven booming grounds, an increase of one site (16.6%) from the previous year. However, the number of booming males dropped to 28 in 2001, a 36.4% decline from 2000 and a 16.7% decline from the seven-year mean total of 33.6. The 2001 mean of four males per lek represented a 45.2% decline from 2000. Known active lek locations are shown in figure 8.2.

2002: This year personnel witnessed a direct loss of one lek in Ringgold Co. (69N, 29W, Sec 3) from previous years due to CRP conversion to rowcrop, but yet maintained seven active leks as in 2001. This is the third year for Decatur, Ringgold, and Wayne counties. Three new locations were found. However, the number of booming males fell again this year (21.4%) to 22, bringing the mean total to 37.0 (Table 8.2). This also continues a two year trend of declining males per lek to 3.1 in 2002. This year the number of leks is near average, but the count of booming males and mean males per lek is below the eight year mean at 59.5% and 52.5% respectfully. Current and prior lek locations are shown in figure 8.2. There were no releases or relocates done in 2002.

DISCUSSION

Prairie chicken reintroduction efforts initiated in Iowa in 1987 and in Missouri in 1993 have resulted in a small, somewhat stable population of prairie chickens across a wide area of southern Iowa and northern Missouri. Large areas of habitat in this area still lack prairie chickens, and additional stocking may help fill in the gaps and augment existing local populations. Proposed stockings in Iowa would include releasing additional hens onto all known booming grounds and establishing new release sites in suitable habitat.

Pasture and hay are still primary land uses in this region. This land use, coupled with a high sign-up in recent CRP programs, should assure adequate grassland habitat for several years. A positive aspect of recent CRP programs was the emphasis on establishing cover beneficial to wildlife instead of grass monocultures. The Wildlife Habitat Incentives Program (WHIP) of the USDA also targets improvement of prairie chicken habitat in south central Iowa and should be beneficial to improving prairie chicken populations. Intensive management of large blocks of grassland by public agencies will help insure adequate habitat into the future. The Ringgold Wildlife Area has 300 ha which is managed as grasslands with open landscapes. Although no booming grounds have been located on this area in recent years, broods have been sighted nearly every summer.

Kellerton Bird Conservation Area/Grand River WHIP Update

A model for landscape-level grassland bird conservation was developed by research biologists in the Midwest and serves as the basic design for Partners in Flight (PIF) grassland Bird Conservation Areas (BCA). The Kellerton Bird Conservation Area (KBCA) was formally designated in 2001 and is PIF's first attempt to put the habitat objectives of the Dissected Till Plains Bird Conservation Plan into action. The KBCA is a 10,000-acre area of public and private lands located in extreme south central Iowa.

In 1998, the KBCA consisted of 70% grassland, 25% cropland, and 5% woodland. At least three current or recently used booming grounds are located within the boundaries. All the land was privately owned, and the grasslands were either pasture, hayfields, or land entered in CRP. Within this 10,000-acre area, a contiguous block of 2,100 acres of grassland was identified as a priority acquisition tract. The total estimated cost of this acquisition based on 1998 prices was $2,000,000. For this reason, acquisition of the 2,100-acre core area was proposed to occur in increments.

A 680-acre parcel was the first desired purchase aimed to protect Iowa's largest greater prairie chicken lek. The cost was $530,000. Unfortunately, the IDNR could not move quickly enough to acquire the 680 acres, and the land was bought by Kellerton Farms, a corporate farming group. However, because of a slump in commodity prices, Kellerton Farms decided to offer the property to the IDNR. The IDNR acquired the initial 680-acre KBCA tract in December 1998. The IDNR, the National Fish and Wildlife Foundation, Pheasants Forever, Iowa Audubon, and numerous private donations provided funds for the initial acquisition. An additional 58-acre tract was acquired in 2001, bringing public lands in KBCA to 738 acres.

In 2001, two broods of prairie chickens, with at least a dozen young per brood, were observed 1.5 miles north of the core public lands, and within the larger designated KBCA.

In addition to the proposed 2,000 acre publicly-owned core area, IDNR and the Natural Resource Conservation Service (NRCS) promote conservation efforts on nearby private land. WHIP and CRP programs can be used to enhance wildlife management on an additional 2,500 acres of land within the KBCA by encouraging farmers to use rotational grazing, cutting trees, and planting native grasses. IDNR's Upland Wildlife Biologist and Area Wildlife Manager work with local NRCS staff to promote WHIP and CRP among area farmers, with emphasis specifically given to the aforementioned land practices. Approximately 100 acres has been improved under WHIP in 2001-2002, employing tree removal, local ecotype prairie seedings and prescribed burning.

The KBCA is the first grassland implementation of the PIF-BCA concept in the country. Wildlife Biologist Mel Moe implemented a management plan that includes a viewing area for prairie chickens. An old osage orange hedge row was cut in the spring of 1999 to open the vista of the new area, and a viewing platform and spotting scope were added in 2000. Large portions of the area continue to be managed for native grasses. Approximately 100 acres of cropland were converted to mixed native seedings in 2000 and 2001, with additional conversions planned for the future.

In addition to the KBCA acquisition, the Missouri Nature Conservancy (TNC) purchased the 2,200-acre Dunn Ranch in the spring of 1999.

The MDC also acquired Pawnee Prairie, a large grassland tract west of the Dunn Ranch. The Missouri TNC and MDC may create the second BCA in the country with these acquisitions.

Acquisition of core grasslands in Iowa and Missouri has led to the development of the Grand River WHIP project. Under the original PIF-BCA concept, approximately 2,500 of private grasslands must also be manipulated to benefit grassland birds. The Grand River WHIP project is a joint proposal between the IDNR, MDC, and NRCS to target $6 million dollars over 5 years into the 70,000-acre core area surrounding the KBCA and Dunn Ranch grasslands. The funding will be used to assist producers implement rotational grazing systems, seed pastures to native species, and remove trees. Funds can also be used to supply materials for fencing and watering systems. The project is contingent upon Congress reauthorizing WHIP in the Agriculture Appropriations bill.

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Table 8.1. Dates, numbers, and locations of greater prairie chicken releases in Iowa, 1980-2001.

Release Date	No. Released	Source*	Release Location
February 1980	29♂ 24♀	KFGC	Loess Hills Wildlife Area, Monona Co.[1]
April 1982	31♂ 18♀	KFGC	Loess Hills Wildlife Area, Monona Co.
April 1987	20♂ 9♀	KFGC	Ringgold Wildlife Area, Ringgold Co.[2]
April 1988	48♂ 75♀	KFGC	Ringgold Wildlife Area, Ringgold Co.
April 1989	40♂ 62♀	KFGC	Ringgold Wildlife Area, Ringgold Co.
April 1992	18♂ 21♀	KDWP (IDNR trapping crew)	Mount Ayr, Ringgold Co., Price Twp., Sec. 13.[3]
April 1992	31♂ 20♀	KDWP (IDNR trapping crew)	Kellerton, Ringgold Co., Athens Twp., Sec. 8.[4]
April 1992	9♂ 9♀	KDWP (IDNR trapping crew)	Ringgold Wildlife Area, Ringgold Co., Lotts Creek Twp., Sec. 24.[2]
April 1993	13♂ 33♀	KDWP (IDNR trapping crew)	Kellerton, Ringgold Co., Athens Twp., Sec. 8. [2]
April 1993	24♂ 24♀	KDWP (IDNR trapping crew)	Orient, Adair Co., Lee Twp., Sec. 36.[5]
April 1994	10♂ 17♀	KDWP (IDNR trapping crew)	Kellerton, Ringgold Co., Athens Twp., Sec. 8.[4]
April 1994	31♂ 34♀	KDWP (IDNR trapping crew)	Orient, Adair Co., Lee Twp., Sec. 36.[5]
April 2001	1♂ 2♀	SDGFP	Kellerton, Ringgold Co., Athens Twp., Sec. 16.[4]

* KFGC = Kansas fish and Game Commission, KDWP = Kansas Department of Wildlife and Parks, SDGFP = South Dakota Game Fish and Parks Department, IDNR = Iowa Department of Natural Resources.

[1-5] Release sites indicated on county map (Figure 8.1)

Table 8.2. Location and number of greater prairie chickens observed on active leks in Iowa, 1995-2002.

		Legal Description			Number of Booming Males[a]							
County	Township Name	Twp.	Rge.	Sec.	1995	1996	1997	1998	1999	2000	2001	2002
Adair	Orient	74N	31W	3	8	4	2					
Adair	Orient	74N	31W	11	3		3					
Adair	Lee	75N	31W	26				1				
Adams	Union	72N	32W	24	1				3			
Decatur	High Point	69N	24W	1				8				
Decatur	High Point	69N	24W	2	5	3	4[b]					4
Decatur	High Point	69N	24W	11				1	1			
Decatur	Franklin	70N	25W	9				2				
Decatur	Franklin	70N	25W	20	2	2	1					
Decatur	Garden Grove	70N	24W	36				10	6	7	4	
Ringgold	Athens	68N	28W	4	14	18[c]	8	5	5	3	1	2
Ringgold	Athens	68N	28W	16	7		5	12	11	14	11	10
Ringgold	Athens	68N	28W	2								1
Ringgold	Poe	68N	29W	?					2			
Ringgold	Rice	68N	30W	24				1				
Ringgold	Rice	68N	30W	13							3	2
Ringgold	Liberty	69N	29W	3					4		5	
Ringgold	Liberty	69N	29W	10						8		
Ringgold	Monroe	69N	28W	2							1	
Ringgold	Monroe	69N	28W	12						7		
Ringgold	Monroe	69N	28W	28					7			
Ringgold	Monroe	69N	28W	33				3				
Ringgold	Monroe	69N	28W	15								1
Union	Spaulding	73N	31W	?	1							
Wayne	Jackson	68N	21W	18						5	3	
Wayne	Jackson	68N	21W	14								2
Total Booming Males[d]		mean=	37.0		40	25	18	43	39	44	28	22
Total Active Leks		mean=	7.6		8	3	5	9	8	6	7	7
Total Males/Lek		mean=	5.9		5.0	8.3	3.6	4.8	4.9	7.3	4.0	3.1

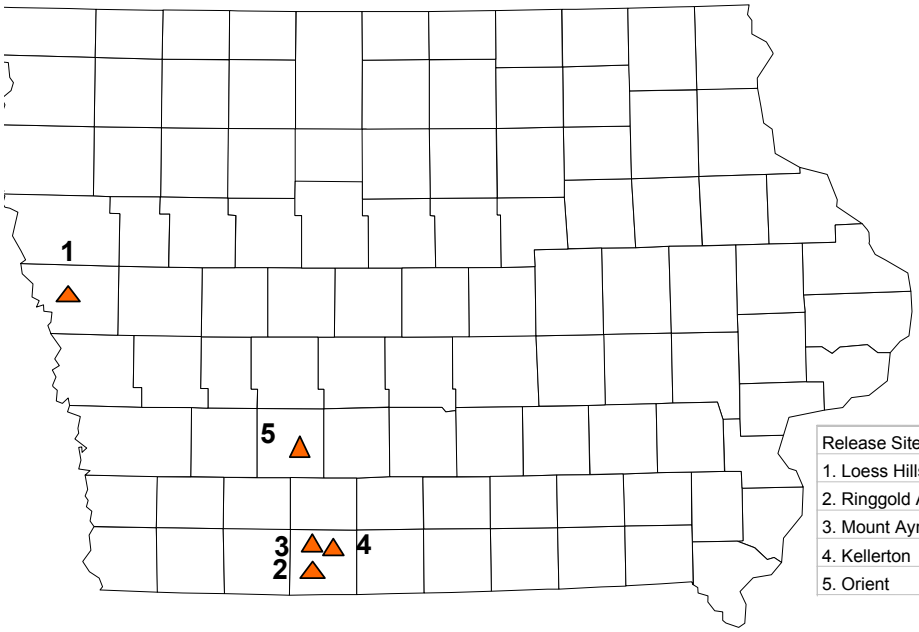
[a] underlined numbers indicate birds were observed, but not booming.

[b] Four males were confirmed booming, but may be as many as 7.

[c] Total of 18 males observed on 4 leks but no legal descriptions reported.

[d] Males not observed booming are not included in totals.

Figure 8.1 Location of release sites and total number of prairie chickens released in Iowa, 1980-2001.



Release Site	Total Released	Years of Release
1. Loess Hills	101	1980, 82
2. Ringgold Area	263	1987, 88, 89, 92
3. Mount Ayr Unit	39	1992
4. Kellerton	137	1992, 93, 94, 01
5. Orient	113	1993, 94

Figure 8.2. Locations of past and active prairie chicken leks in Iowa.